

## DESCRIPTION OF ONE NEW SPECIES OF ORIENTAL BAMBOO PLANTHOPPER GENUS *ARCOFACIES* MUIR (HEMIPTERA, FULGOROIDEA, DELPHACIDAE) FROM YUNNAN, CHINA

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**Abstract** One new species of the Oriental bamboo planthopper genus *Arcofacies* Muir, 1915 (Hemiptera, Fulgoroidea, Delphacidae, Delphacinae, Tropidocephalini), *Arcofacies moliensis* sp. nov., collected from Moli, Ruili, Yunnan Province, China, is described and illustrated. A key to 5 Chinese known species of this genus is provided. The type specimens are deposited in the Institute of Entomology, Guizhou University.

**Key words** Delphacidae, *Arcofacies*, new species, Yunnan Province of China, bamboo pests

### 1 Introduction

The delphacid genus *Arcofacies* (Hemiptera, Fulgoroidea, Delphacidae, Delphacinae, Tropidocephalini) was established by Muir (1915) based on specimens from Manila, the Philippines (type species: *Arcofacies fullawayi* Muir, 1915). This genus is easily separated from other members in this tribe by the postclypeus at right angle to frons, by a white median longitudinal line extending from the apex of the frons to end of the mesonotum, along the line bordered with black or brown stripe, and by the forewings often with blackish brown markings, in dark portion veins bear white spots (Chen et al., 2007). It is known to occur in the Oriental region and seven species have been recorded worldwide (Muir, 1915; Muir, 1919; Fennah, 1973-1975; Ding, 1987, 1990; Chen et al., 2007). Recently, Chen et al. (2007) reviewed the Chinese species of *Arcofacies*, and described or redescribed and illustrated 4 species: *A. fullawayi* Muir, 1915 (Fujian, Taiwan, Chongqing, Hongkong, Hainan, Guizhou), *A. maculipennis* Ding, 1987 (Guizhou), *A. strigatipennis* Ding, 1990 (Fujian), and *A. ampelocalamus* Chen, 2007 (Guizhou). Species of *Arcofacies* from China have been found feeding exclusively on bamboo (Bambusoideae) (Ding, 1987, 1990; Yang and Yang, 1986; Yang et al., 1999; Chen, 2003; Chen et al., 2007).

In the present paper, we describe and illustrate 1 new species of *Arcofacies* from Yunnan Province, China. A key to all known species found in China is provided.

### 2 Material and Methods

The methods and morphological terminology used in this study follow Yang and Yang (1986) and Ding (2006). Spinal formula of hind leg means the numbers of spines of the tibia, plus the 1<sup>st</sup> and 2<sup>nd</sup> tarsomeres. The genital segments of the examined specimens were macerated in 10% NaOH and drawn from preparations in glycerin using a light microscope. Figures of the specimens were made using Leica MZ125 and edited and enhanced using Adobe Photoshop 7.0 (Adobe Systems).

Type specimens are deposited in the Institute of Entomology, Guizhou University, Guiyang, Guizhou Province, China (IEGU).

#### 2.1 Genus *Arcofacies* Muir, 1915

*Arcofacies* Muir, 1915: 319; Kuoh et al., 1983: 45; Yang and Yang, 1986: 34; Ding, 1990: 74; Ding et al., 1999: 442; Ding, 2006: 115; Chen et al., 2007: 684.

Type species: *Arcofacies fullawayi* Muir, 1915, by original designation.

The distinctive characters used by Chen et al. (2007) are listed as follows.

General color yellowish green to yellowish brown. A white median longitudinal line extends from the apex of the frons to the end of mesonotum, along the line bordered with dark brown or black. Lateral parts of pronotum each with oblique white band bordered with brown or dark brown. Forewings with light brown in basal third, apical portion hyaline, speckled with dark brown markings, in dark portion veins bear white spots. Hindwings hyaline with brown

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veins

Head including eyes narrower than pronotum (Fig. 1). Vertex trapeziform, with margins more or less well defined, wider at base than long submedially (1.70-1.88 1.00), apical margin distinctly emarginate at both sides of median point, lateral carinae concave, submedian carinae transverse. Y-shaped carina without stalk, with very short arms, connecting submedian carinae which forms a small cell, in lateral view vertex and frons at right angle (Figs. 3, 7). Frons in middle line longer than wide at widest point (1.75-2.17 1.00), widest at level of ocelli or at apex, lateral carinae convex at base, nearly straight below level of ocelli, median carina not well developed throughout, forked at extreme base (Figs. 4, 6). Postclypeus slightly wider at base than frons at caudad medially or not, with a small medioventral process or not. Aedeagus tubular or flat, with spinous process or not, orifice subapical. Diaphragm amature sclerotized and pigmented, V-shaped. Diaphragm wide, membranous. Genital styles long, simple, broad at base, narrowing apically, basal angle intumescent, apex twisting outward more or less.

Host plant *Bambusa multiplex* (Lour.) Raeuschel, *B. oldhamii* Munro, *B. multiplex* Raeuschel cv. "Fernleaf" Young (Yang and Yang, 1986), *Neosinocalamus affinis* (Rendle) Keng, f; *Ampelocalamus*

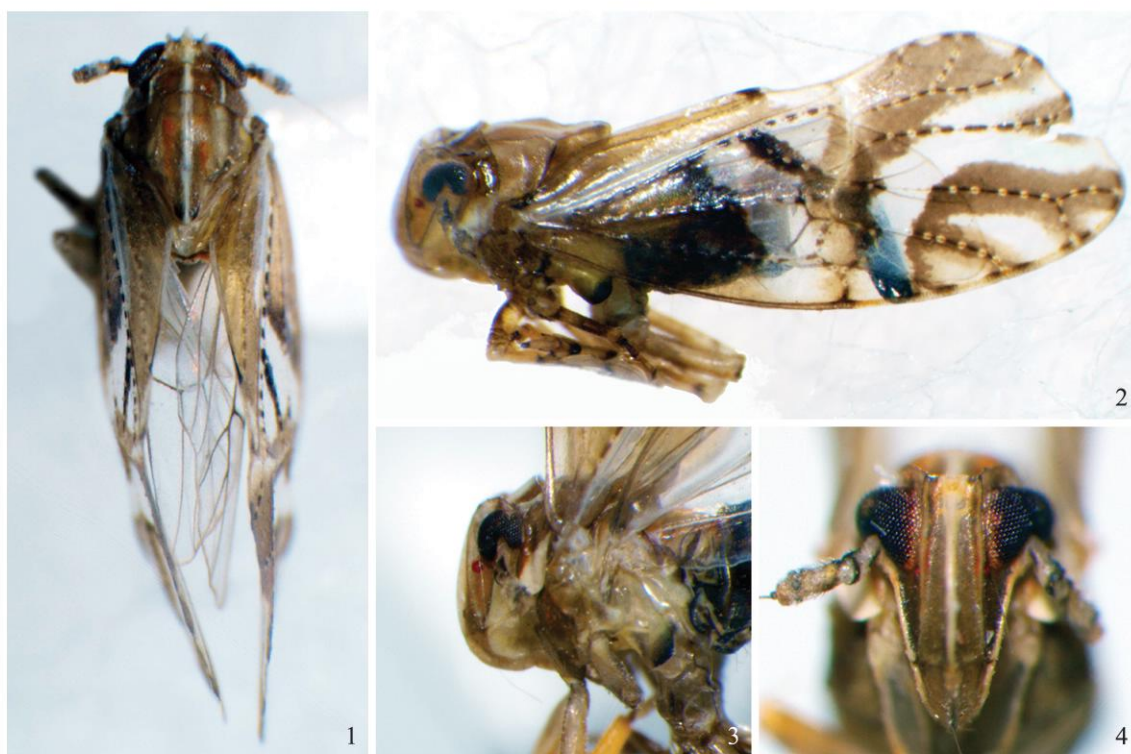
apex, at right angle to frons, tricarinate (Figs. 2-4, 6-7). Rostrum almost extending to mesotrochanters. Eyes in dorsal view with lateral margin emarginate medially. Lateral ocelli present. Antennae cylindrical, scape distinctly longer than wide (1.6-2.0 1.0), shorter than pedicel (0.52-0.59 1.00). Pronotum with lateral carinae extending to hind margin, converging apically, median carina weak (Fig. 1). Forewings tectiform at rest. M and Sc1 of wing with a long common stalk, Cu<sub>2</sub> arising from end of cross vein or basad (Figs. 2, 8). Spinal formula of hind leg 5-6-4.

Anal segment of male collar-shaped, lateroapical angles produced into spinous processes or not. Pygofer in posterior view with opening longer than wide (1.29-1.60 1.00), lateral margins strongly produced. Scandons (Hsueh and Li) Chen, Wen and Sheng, (Chen et al., 2007).

Distribution. Oriental Region (China; the Philippines, Malaysia, Indonesia, Singapore, Sri Lanka).

Key to species of *Arcofacies* Muir from China (male)

1. Lateroapical angles of anal segment of male truncate, without spinous process ..... *A. fullawayi*
- Lateroapical angles of anal segment produced into a stout spinous process respectively (Figs. 9-10, 12-13) ..... 2
2. Aedeagus simple, without elongate spinous process ..... *A. maculatipennis*



Figs. 1-4. *Arcofacies moliensis* sp. nov. 1. Lateral habitus (holotype). 2. Lateral habitus (paratype). 3. Head and thorax, lateral view. 4. Frons and clypeus.

- Aedeagus with long spinous process at middle or at base (Figs 12-13, 17) ..... 3
3. Aedeagus with 2 long spinous processes at middle ..... A. strigatipennis
- Aedeagus with long spinous process at base (Fig 17) ..... 4
4. Spinous processes of anal segment curved and directed ventrad; pygofer in posterior view with small medioventral process, flake-shaped; in lateral view caudal margin nearly straight; aedeagus in profile narrowing medially, with apex round and blunt; apex of genital style not forked ..... A. ampelocalamus
- Spinous processes of anal segment directed laterad (Fig 9); pygofer in posterior view without medioventral process (Fig 11); in lateral view caudal margin concave (Fig 10); aedeagus in profile narrowing apically, with apex relatively acute (Fig 17); apex of genital style forked (Figs 15-16) ..... A. moliensis sp. nov.

## 2.2 *Arcofacies moliensis* sp. nov. (Figs 1-17)

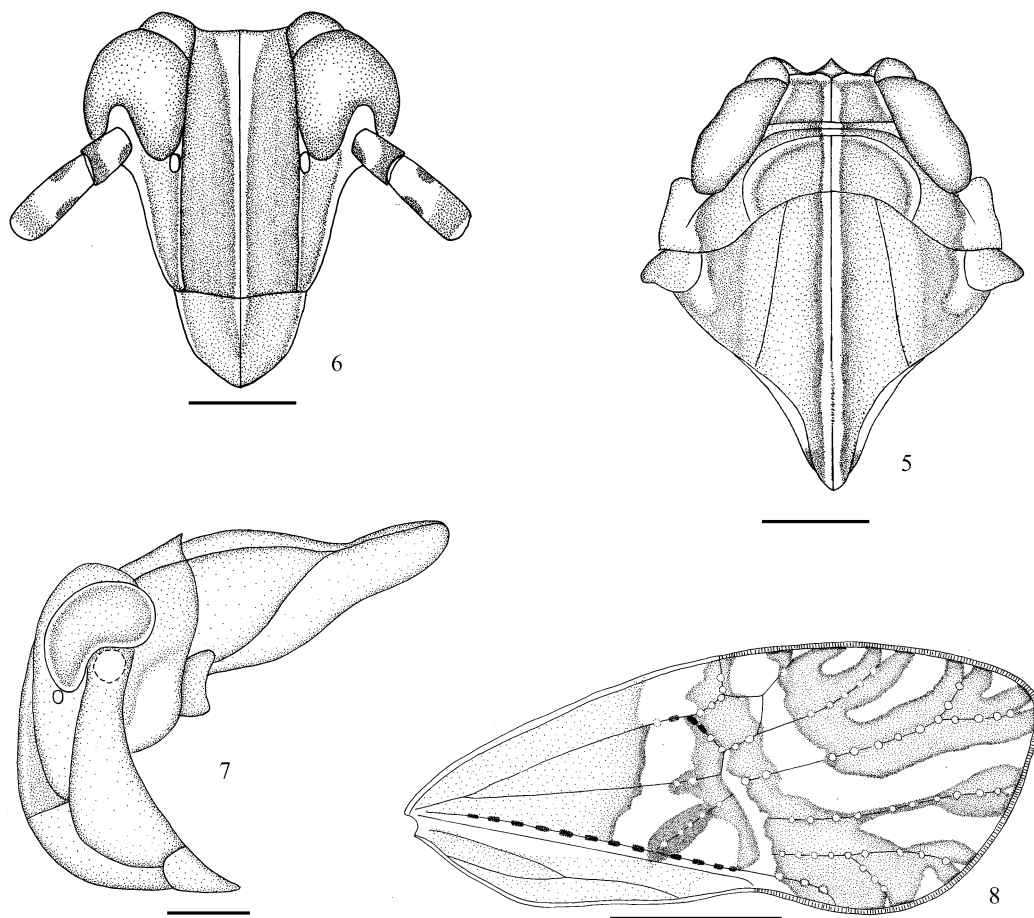
**Description.** Body length male 1.9-2.0 mm; including fore wing male 2.6-2.8 mm; tegmen length male 2.0-2.1 mm.

**Coloration.** General color yellowish brown (Figs 1-4). Frons, clypeus, gena, vertex, pronotum and mesonotum yellowish brown to brown, a white median line from median of clypeus to end of mesonotum bordered with blackish brown, along lateral carinae of postclypeus, gena, vertex and pronotum with white line; eyes yellowish brown to blackish brown; ocelli reddish brown; antennae with

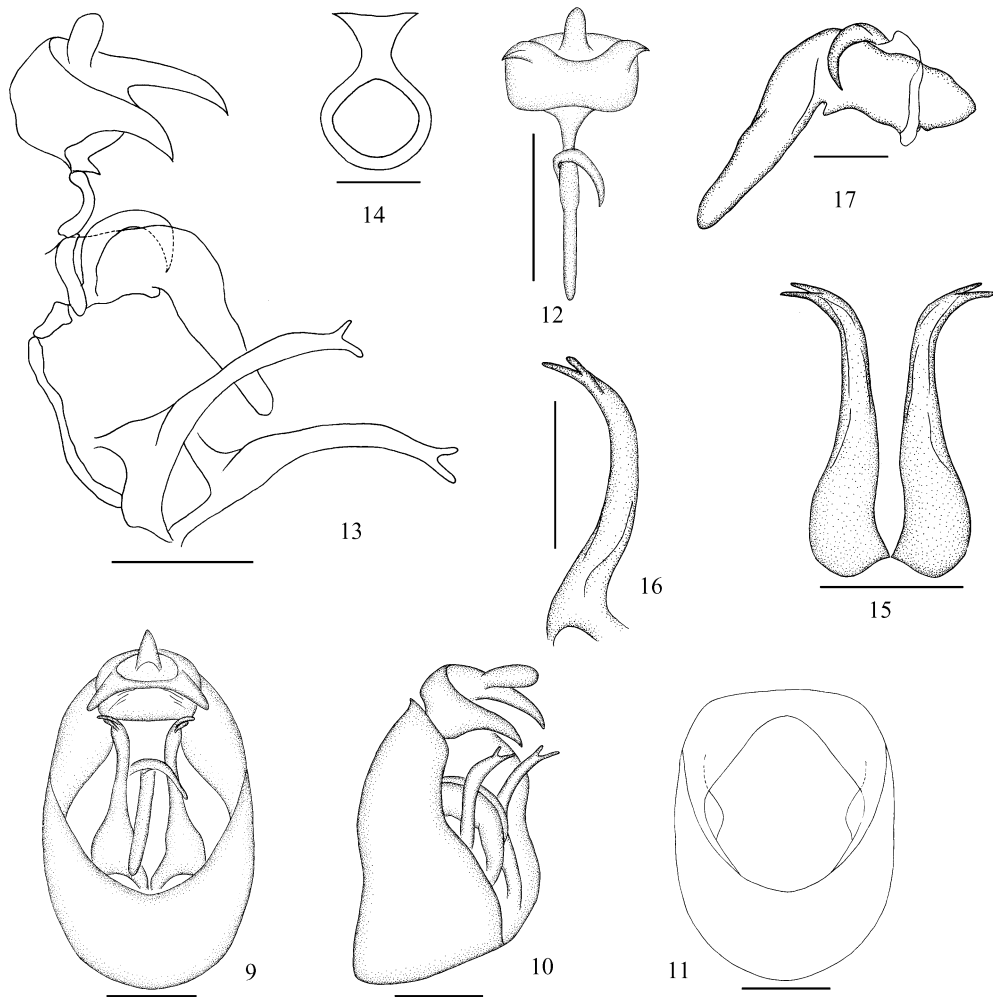
dorsal and ventral margins and apex of scape, base and near apex of pedicel brown to dark brown; lateral parts of pronotum and mesonotum each with oblique white band; forewings with pale brown over basal third, rest area hyaline, along transverse vein and apical veins bordered dark brown stripes as figured, in dark portion veins bear white spots; wings hyaline with pale brown veins; legs with fore and median femora dirty yellowish white, both end of tibiae and digitus of hind legs dark brown; abdomen mostly dark brown, except posterior margin of each segments yellowish brown, with a small reddish orange mark at dorsal apex, pygofer brown to blackish brown, anal segment yellowish brown to brown.

**Head and thorax.** Structural features as in generic descriptions. Vertex wider at base than long submedially about 1.5 1.0. Frons longer in middle line than wide at widest part about 2.4 1.0, widest at apex. Antennae reaching frontoclypeal suture, scape longer than wide at apex about 1.15 1.00, shorter than pedicel about 0.4 1.0.

**Male Genitalia.** Anal segment of male short, ring-like, lateroapical angles each produced into stout process, acute at apex, in posterior view directed



Figs 5-8. *Arcofacies moliensis* sp. nov. 5. Head and thorax, dorsal view. 6. Frons and clypeus. 7. Head and thorax, lateral view. 8. Forewing. Scale bars: 5-7 = 0.2 mm, 8 = 0.8 mm.



Figs 9-17. *Arcofacies moliensis* sp. nov. 9. Male genitalia, posterior view. 10. Male genitalia, lateral view. 11. Pygofer, posterior view. 12. Anal segment and aedeagus, posterior view. 13. Anal segment, aedeagus, connective and genital styles, lateral view. 14. Suspensorium, posterior view. 15. Genital styles, posterior view. 16. Left genital style, lateral view. 17. Aedeagus, right side. Scale bars: 9-13, 15-16 = 0.2 mm, 14, 17 = 0.1 mm.

laterad (Figs 9-10, 12-13). Pygofer in posterior view with opening larger in length than width about 1.3 : 1.0, ventral margin broad concave, without medioventral process (Fig 9), in lateral view posterior margin concave at middle (Fig 10). Aedeagus tubular, strongly bent ventrad near median, basal half thick, apical half narrowing apically, apex blunt, middle ventral margin with a small process, a long spinous processes arising from left base, then strongly bent ventrad (Figs 12-13, 17). Genital styles moderately long, reaching ventral margin of anal segment, moderately broad at base, narrowing apically, forked at apex (Figs 15-16).

**Holotype** , China, Moli Tropical Rain Forests (97° 33' N, 24° E), Ruili City, Yunnan Province, 15 June 2009, collected by YANG Zai-Hua. **Paratypes** 2 , same data as holotype.

**Host plant** Bamboo.

**Distribution**. Southwest China (Yunnan Province).

**Etymology**. The specific name refers to the type locality, Moli, Ruili City, Yunnan Province.

**Remarks**. This species is closely related to *A. ampelocalamus* Chen, but differs as follows: lateral carinae of frons yellowish brown, without white line (in the latter, lateral carinae of frons bordered with white lines); spinous processes of anal segment relatively shorter, in profile attaining 1/3 of pygofer, in posterior view directed laterad (in the latter, spinous processes of anal segment relatively longer, in profile attaining 1/2 of pygofer, in posterior view curved and directed ventrad); pygofer in profile with posterior margin concave at middle, in posterior view with ventral margin broadly concave, without medioventral process (in the latter, pygofer in lateral view with posterior margin nearly straight, in posterior view ventral margin with small medioventral process, flake-shaped); apex of genital style forked (not forked in the latter); aedeagus narrowing apically, apex relatively acute (in the latter, aedeagus narrowed at

apical 1/3, apical part strongly expanded, apex round and blunt).

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## 中国云南危害竹子的东洋区梯顶飞虱属一新种记述 (半翅目, 蜡蝉总科, 飞虱科)

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**摘要** 记述来自中国云南省瑞丽市莫里热带雨林景区竹子上的东洋区梯顶飞虱属 *Arofacies* Muir 1 新种, 即莫里梯顶飞虱 *Arofacies moliensis* sp. nov.。文中提供了新种的鉴别特征图和中国现有种类检索表。模式标本保存于贵州大学昆虫研究所。

**莫里梯顶飞虱, 新种** *Arofacies moliensis* sp. nov. (图 1~17)

新种与悬竹梯顶飞虱 *Arofacies ampelocalamus* Chen, 2007 十分近缘, 区别在于: 额侧脊黄褐色, 无白色带纹 (后者额侧脊内侧镶有白色带纹); 臀节刺突较短, 侧面观仅伸达尾节

**关键词** 飞虱科, 梯顶飞虱属, 新种, 中国云南, 竹子害虫。  
**中图分类号** Q 969.35

后开口的 1/3, 后面观刺突斜指向两侧 (后者臀节刺突较长, 侧面观伸达尾节后开口的 1/2, 后面观刺突弯向腹面); 尾节侧面观后缘凹入, 后面观腹缘中央弧圆凹入, 无突起 (后者尾节侧面观后缘直, 后面观腹缘中央具片状突起); 阳基侧突端部分叉 (后者阳基侧突端部分不分叉); 阳茎端向渐细, 末端较尖 (后者阳茎端 1/3 处明显缢缩, 端部膨大, 末端钝圆)。

**正模** , 云南省瑞丽市莫里热带雨林景区, 竹子, 2009-06-15。杨再华采, 副模 2 , 余同正模。

**词源:** 新种以模式标本产地云南莫里 (Moli) 命名。

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